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Fourteen hundred faculty members in 50 departments were questioned to determine the amount of formal research done each year in the nine Wisconsin State Universities. Responses revealing research productivity by department, amount of research done in teaching-learning (educational), percentage of faculty that do not engage in research because of lack of time, and percentage of faculty that do not engage in research because of lack of funds showed a very high correlation between low research productivity and lack of time, and a highly significant multiple correlation of low research productivity on lack of time and lack of funds (although there was almost no correlation between low research productivity and lack of funds). College faculties should be allowed more time (and therefore will need increased fund allotments) to carry on research which will help solve problems in education. (Author/SM)

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RESEARCH RATES AND DELIMITERS IN THE WISCONSIN STATE UNIVERSITIES

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RESEARCH RATES AND DELIMITERS IN THE WISCONSIN STATE UNIVERSITIES

University Perspective

The nine Wisconsin State Universities are primarily teacher training institutions. Consequently, historical emphasis has been on the teaching function, rather than the research function, of faculty members.

These universities are typical of the small teachers colleges throughout the nation that have had a meteoric growth rate during the last two decades. In many of these universities the entering freshman class is now larger than the entire university enrollment a decade ago.

The Wisconsin State Universities now have the fifth highest full-time enrollment in the United States. This does not include the University of Wisconsin which occupies eighth place in the nation. The Wisconsin State Universities are eighth highest in the nation if all students, including part-time, are considered. With an enrollment approaching 60,000, and a faculty that will increase to 4,000 members in the near future, the Wisconsin State Universities are being forced into new leadership positions in public and higher education.

As enrollment, number of personnel, and plant size increase, it is also assumed productive capacity increases. The questions that arise are, "production of what" and "capacity for what." To answer the questions requires some degree of crystal gazing since we are hazarding opinions about the future.

Certainly, increasing size implies continuity of current efforts, new societal demands, new programs, and additional personnel in sufficient

numbers to move toward more sophisticated undertakings. In essence, it boils down to an increased capacity to produce that which smaller organizations and fewer people could not. The other side of the coin is that increased capacity also means increased responsibility to the publics to whom higher education owes its allegiances. In more abrupt terminology, the bigger you get the more that is expected of you.

The state universities must face the fact they are going to have new problems and demands thrust upon them that will require new answers, plans, and action modes. While answers may be heaven sent, they often appear to take rather devious routes, and without a welcoming committee they often seem to get lost in transit. In the business of education in general, and higher education in particular, answers are produced by researchers. At least they are supposed to be.

Research Structure

It is no longer sufficient to say research with its answers will somehow come out of the university structure. Admittedly, some research, and, consequently, some answers, has come from the universities. But more problems exist than have ever been solved, and growth rates and societal changes are compounding the problem. We haven't really scratched the surface, and what scratching has been done has generally occurred on a haphazard basis. Agreed, there have occassionally been solution plans, but they have usually proven to be inadequate, of short duration, and spasmodic.

It would be nice if we could say our past has been hazy, and we see the future looming up, so let's go. Our present research commitment, investment, and structure need careful examination before we can lay plans for a revised or new research program.

Historically, university research, at least the research appearing in print, has been done by individual professors working as individuals. The researcher has been akin to the Crusaders. Each man, wrapped in his own armor, was a fortress unto himself. On this same note, it is interesting to reflect that those armies that were more flexible, more fluid, less encumbered, varied their attack, had better weapons, and attacked from several quarters at once, whipped the living daylights out of the Crusaders.

If university level research is going to have to play a key part in our developing institutions of higher education, then it is time to find out just how well we are doing and what provisions we will have to make to plan a worthwhile research commitment.

How Much and What Kind

Nearly 1,400 faculty members in over 50 different departments participated in the study presented here. In each instance, all the individuals in a department were questioned, rather than sampling a few individuals in a department. This process circumvented the study bias of gathering data from only those individuals ammenable to the research climate.

The first problem was to find out how many faculty members currently do some type of research with written results each year. Whether or not the research was accepted for publication, and the type of research, with one categorical exception, were not considerations. Since the Wisconsin State Universities are primarily teacher training institutions, it was of especial interest to discover how much of the research that is done is research in a teaching-learning area.

By teaching-learning is meant educational research, research to find a better way to teach a class in any discipline, research to discover the

the effectiveness of some new instructional technique, research to discover why students in some class have learning difficulties, etc. If a chemist, for example, was studying molecules, this would not be teaching-learning research. But, if that chemist was trying to find a better way to teach his class about molecules that would be teaching-learning research. However, in each instance it would have to be a formal research project.

Essentially, the study was divided into two main parts; assessment of those who did, and those who did not do, some type of research during the previous year. Of those who did research, was that research in a teaching-learning area, or was it some other type? Of those who did not do research, was it because of insufficient time, insufficient funds, or some other reason? The two key issues were whether a lack of time or a lack of funds were the research productivity delimiters.

Since the study encompassed a broad and large cross section of all faculty members through entire departments we can assume the results hold for all faculty members. This permits the use of straight line projective techniques, and allows us to speak of the study participants as the entire faculty of all of the Wisconsin State Universities. Any error introduced by this type of assumption will be small, and will not invalidate the overall picture presented by the research results.

In the Wisconsin State Universities, 35 percent of all faculty members do some type of formal research each year. Of this 35 percent who do some type of research each year, 47 percent of them do research in a teaching-learning area. However, this 47 percent doing teaching-learning research represents only 16 percent of the total faculty of the Wisconsin State Universities.

Of those faculty members who do not do some type of research each year, what are the preventive factors? Insufficient time accounts for 31 percent,

RESEARCH MODES

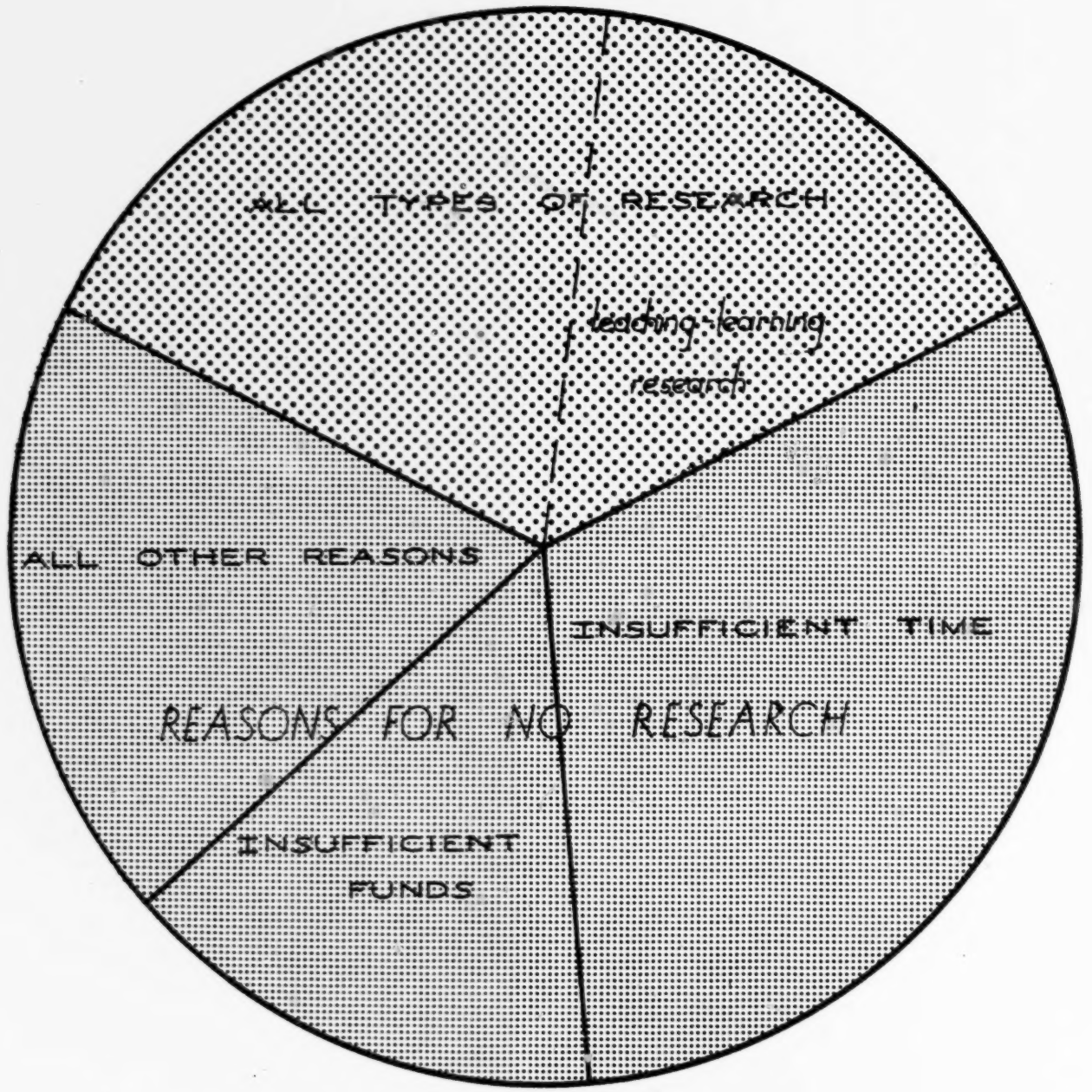

FIG. 1. RESEARCH MODES - ALL FACULTY MEMBERS

insufficient funds for 15 percent, and all other reasons 19 percent (Fig. 1). Interestingly, the factor of time is twice as large as the monetary factor. The two factors taken together, insufficient time and insufficient funds, prevented 46 percent of the faculty members from doing some type of research. However, as will be pointed out later, time is also money.

When the academic departments in the Wisconsin State Universities are analyzed, a somewhat similar picture emerges. However, examination of Table 1 indicates much different distribution modes.

The various departments that were analyzed were grouped for analysis simplicity. While there is no firm basis for grouping departments, and at best such groupings are arbitrary, the mass of data mandates grouping practices. Overall, the groupings used here do not appreciably affect the results for any department within a group, and for practical purposes one may assume any department within a group parallels group data.

Departments doing some type of research each year range from a high of 56 percent in an agricultural grouping to a low of 18 percent in the physical education grouping. However, the agricultural grouping was among those with the lowest percentage of teaching-learning research. Similarly, the art and home economics groupings do relatively little teaching-learning research. On the other hand, all of the research done in the speech grouping, and most of that done by the physical education grouping is teaching-learning research.

The data presented in Table 1 and Figure 2 indicates a fairly good relationship between insufficient time and low research productivity. Generally, the members of departments with low productivity stated they had insufficient time for research, while those with relatively high research productivity did not find the time factor as serious. Similarly, but to a

TABLE 1. DEPARTMENTAL RESEARCH MODES

Departments (Grouped as Typologically Close as Possible).	Percentage of Dep't. Engaged in Some Type of Research Each Year	Percentage of Dep't. Engaged in Teaching-Learning Research Each Year	Percentage of Dep't. Engaged Research That Is Learning Research	Percentage of Departmental Not Do Research Because of Insufficient Time	Percentage of Dep't. That Did Not Do Research of Any Type Because of Insufficient Funds	Percentage of Dep't. That Did For Reasons of Any Type Insufficient Time or Funds	Percentage of Dep't. That Did Not Do Research Other Than
Accounting Agricultural Economics, Business, Business Admin., Business Education, Economics	38	18	48	30	15	17	
Agricultural Education, Education: Elem., Sec., Educational Psychology, Philosophy, Psychology, Student Teaching	25	15	57	40	18	17	
Agricultural Engineering, Agricultural Industries, Agricultural Sciences	56	6	10	33	11	0	
Animal Science, Biology, Natural Resources, Plant and Earth Sciences	47	21	42	33	20	0	
Art, Architecture, Drama, Engineering Graphics, Music	26	3	11	9	9	57	
Chemistry, Computer Science Mathematics, Physics	40	13	33	30	17	12	
Civil Engineering, Geology, Industrial Technology, Industrial Education, Mineral Engineering, Technics	43	19	44	14	11	32	
English, Foreign Language, Journalism	45	27	60	18	12	25	
Geography, History, Political Science, Sociology	43	14	33	23	13	21	
Health, Physical Education, Recreation, Safety	18	16	90	53	11	19	
Home Economics, Library Science	24	4	17	63	8	4	
Instructional Media, Military Science, All Other Dept's.	27	14	53	34	18	21	
Speech Speech Pathology, Audiology	23	26	100	19	6	51	

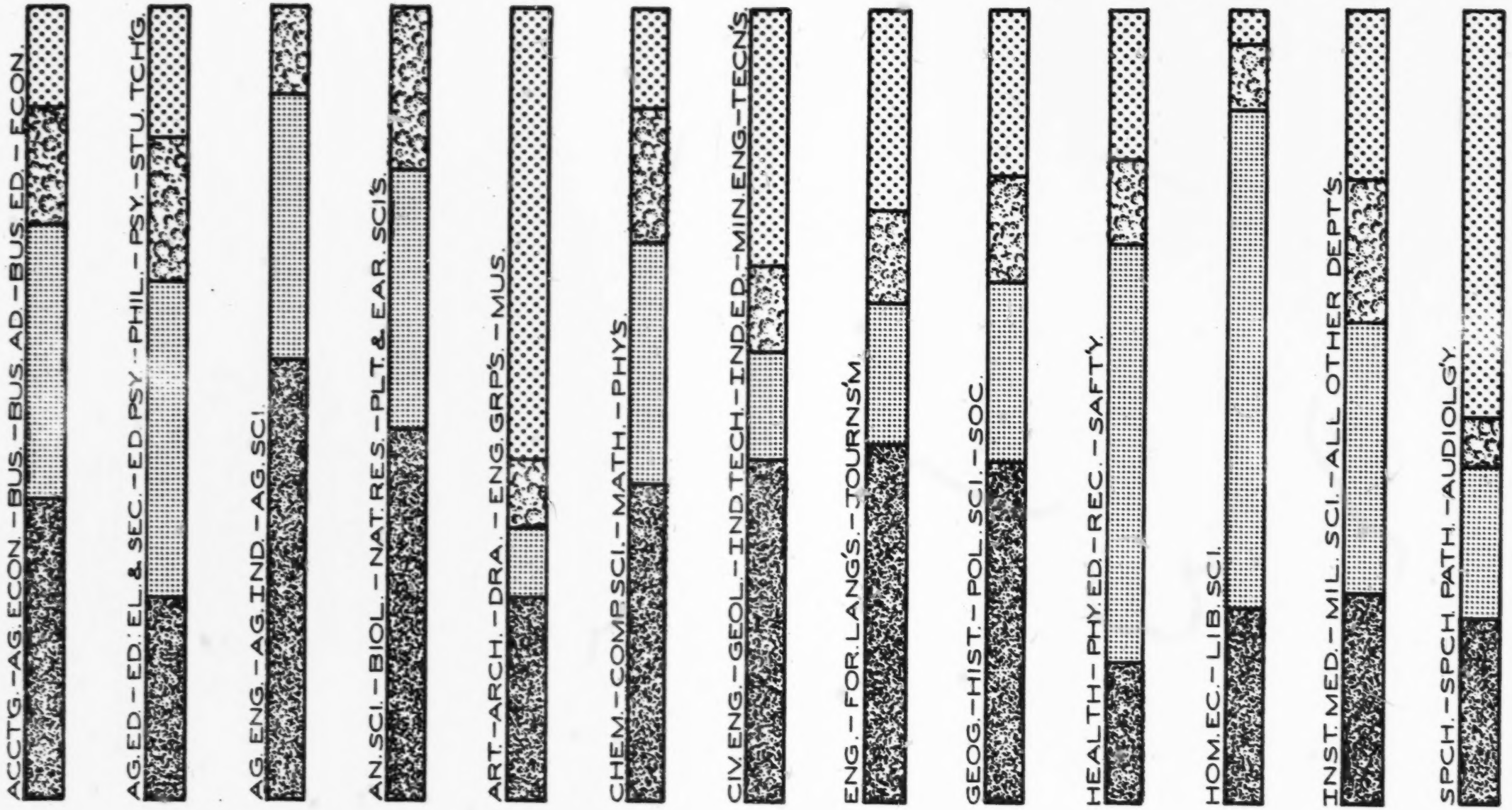
ACCT'G.-AG.ECON.-BUS.-BUS. AD.-BUS. ED.-F.CON.
AG.ED.-ED. EL. & SEC.-ED PSY.-PHIL.-PSY.-STU. TCH'G.
AG. ENG.-AG. IND.-AG. SCI.
AN. SCI.-BIOL.-NAT. RES.-PLT. & EAR. SCI'S.
ART.-ARCH.-DRA.-ENG. GRP'S.-MUS.
CHEM.-COMP. SCI.-MATH.-PHY'S.
CIV. ENG.-GEOL.-IND. TECH.-IND. ED.-MIN. ENG.-TECN'S
ENG.-FOR. LANG'S.-JOURN'S'M.
GEOG.-HIST.-POL. SCI.-SOC.
HEALTH-PHY. ED.-REC.-SAFT'Y.
HOM. EC.-LIB. SCI.
INST. MED.-MIL. SCI.-ALL OTHER DEPT'S.
SPCH.-SPCH. PATH.-AUDIOLG'Y.
NO RESEARCH - REASON NOT INSUFFICIENT TIME OR FUNDS
" " - INSUFFICIENT FUNDS
" " - " TIME
DID SOME TYPE OF RESEARCH

FIG. 2. DEPARTMENTS - RESEARCH MODES

lesser degree than time, lack of funds paralleled lack of research.

While insufficient time and funds were the primary research productivity delimiters, there were other reasons. While it may be interesting to postulate reasons for non-productivity, this type of guessing is not good research style. The reader may study Table 1 and Figure 2 and formulate his own opinions.

We would expect high research productivity to be coupled with low insufficient time and insufficient funds. Conversely, we would expect low research productivity to be coupled with high insufficient time and insufficient funds. For all departmental groupings the correlation between research productivity and insufficient time is $r=-0.3562$, while the correlation between research productivity and insufficient funds is $r=+0.2624$. The multiple correlation of research productivity, on insufficient time, and insufficient funds is $R=+0.4690$. Therefore, for all departmental groupings we find some of the expected relationship between research productivity and insufficient time, but not between research productivity and insufficient funds. However, the correlation between research productivity and insufficient time is not great if all departments are considered.

A scatterplot analysis indicates that while most departments fall along a linear plot for research productivity and insufficient time there are some departmental groupings that are atypical, causing the low negative correlation. These are the departmental groupings where lack of research is caused by factors other than insufficient time or funds, or the extreme case where there is relatively high research output, but there is still a lack of time or funds. Therefore, scatterplot analysis, large sample size, and low correlation coefficients indicate the possibility of Type I and II statistical decision errors.

Scatterplot analysis indicates the agricultural grouping tends to be an extreme case where there is high research output accompanied by high insufficient time. The art and speech groupings are extreme cases where research output is low, but insufficient time is not the cause. The home economics grouping enters a separate extreme case category since research output is low, but insufficient time is abnormally high.

In statistical analyses procedures there are always certain hazards associated with removing any data from the final analysis. However, the rules of logic, in this instance allowing for Type I and II decision making errors, always take precedence. By dropping the four extreme case departmental groupings, agriculture, art, home economics, and speech a more valid picture of research productivity delimiters emerges.

After removing the four extreme case departmental groupings there is a very high correlation between research productivity and insufficient time, $r=-0.8296$. However, the correlation between research productivity and insufficient funds falls to almost no correlation, $r=+0.0322$. The multiple correlation of research productivity on insufficient time and insufficient funds rises to a highly significant $R=-0.8649$, indicating that as research productivity decreases, insufficient time and funds increase. That this situation is very nearly linear is indicated by the coefficient of multiple determination of research productivity on insufficient time and funds, showing that nearly 75 percent of the total variation in research productivity can be explained by the use of a regression equation for insufficient time and funds. However, if the four extreme case departmental groupings are not removed from the calculations the coefficient of multiple determination shows that only 22 percent of the total variation in research productivity can be explained by a regression equation for insufficient time and funds.

TOTAL (ALL) RESEARCH RATE - CURRENT AND PROJECTED

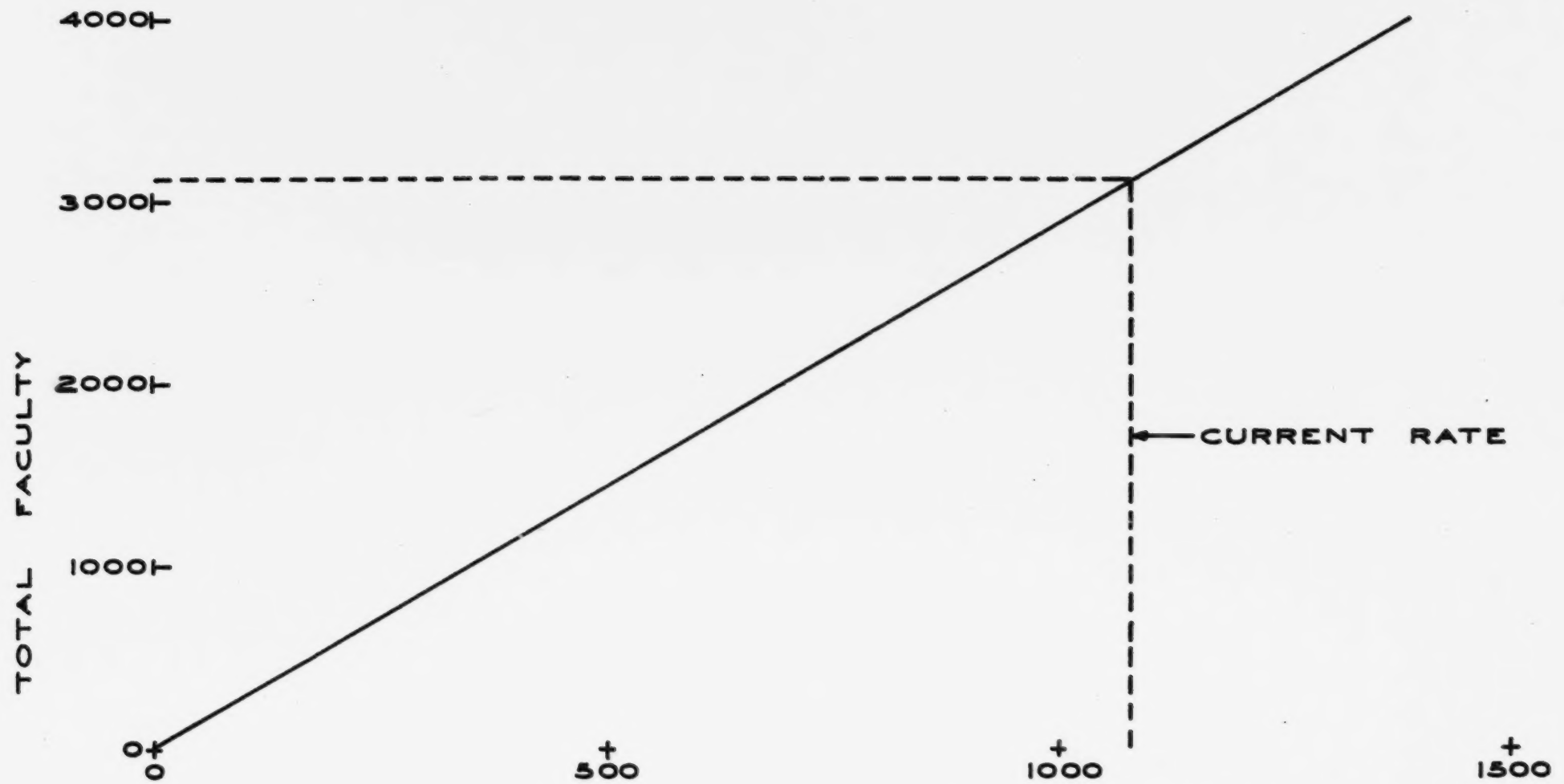

FIG. 3. NO. OF FACULTY DOING SOME TYPE OF RESEARCH

NO RESEARCH - LACK OF TIME - CURRENT AND PROJECTED

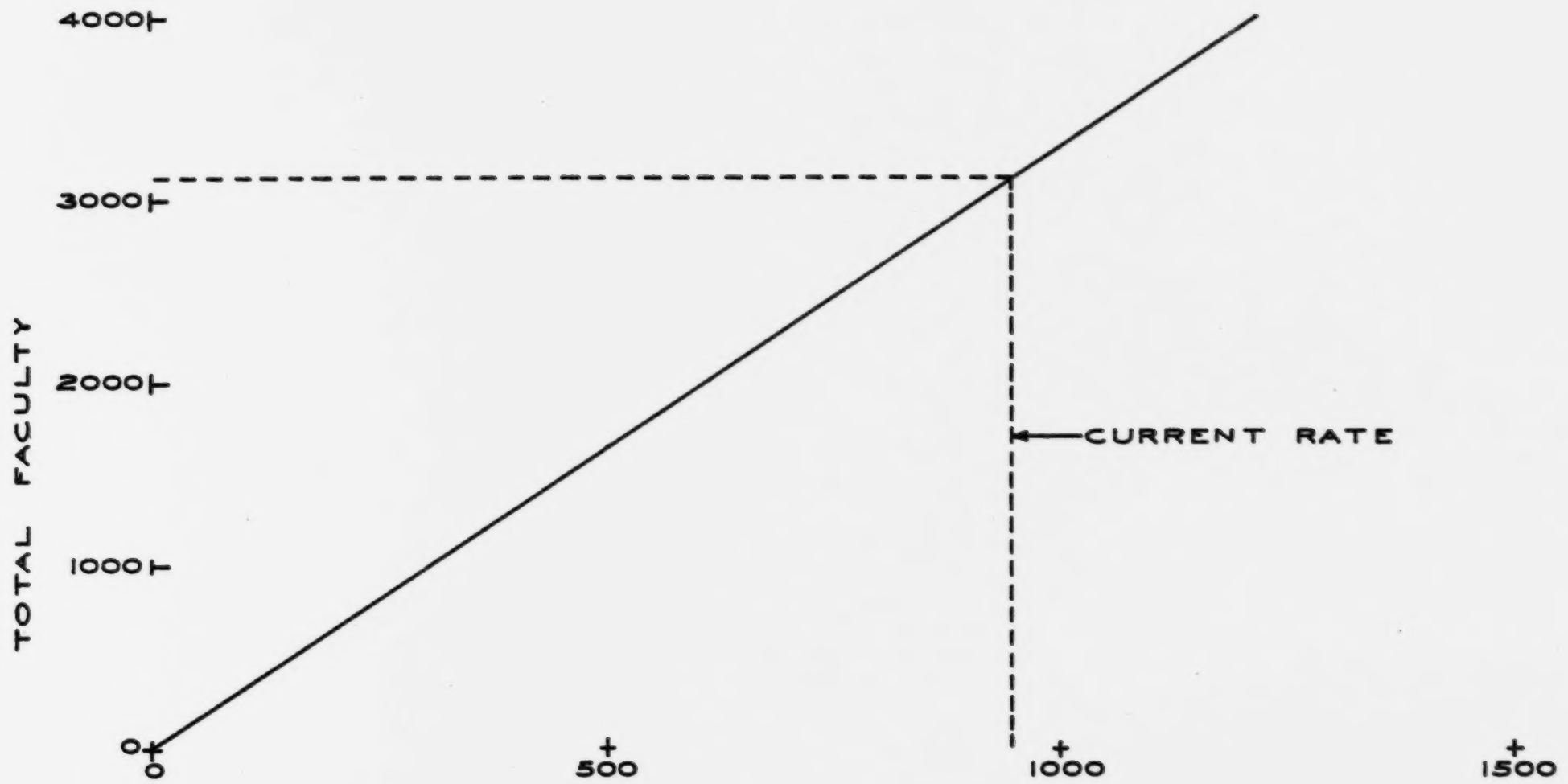

FIG. 4. NO. OF FACULTY WITH INSUFFICIENT TIME FOR RESEARCH

NO RESEARCH – LACK OF FUNDS – CURRENT AND PROJECTED

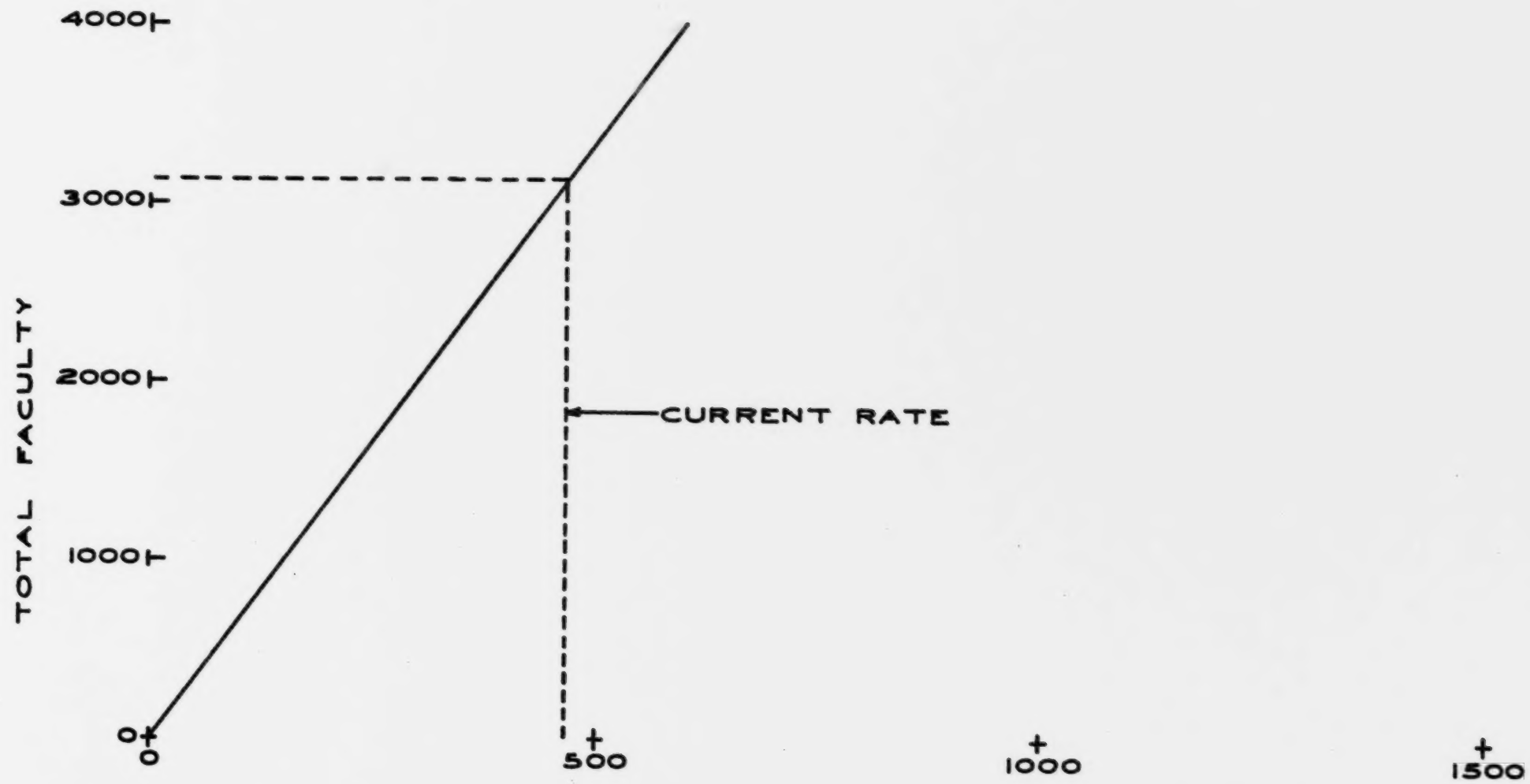

FIG. 5. NO. OF FACULTY WITH INSUFFICIENT FUNDS FOR RESEARCH

Portents for the Future

We have taken a long look at our present research position. The obvious questions center on whether we are happy in our present state, whether we wish to change our present state, whether we should change our present state, and whether we can change our present state. It is the latter question that demands examination.

Figure 3 indicates that out of an academic faculty of about 3,100 members, about 1,100 do some type of research, Figure 4 indicates about 900 do not have sufficient time for research, and Figure 5 indicates about 500 do not have sufficient funds for research.

As we previously stated, time is also a form of money. Let us assume a faculty member makes $10,000 a year. To do his research he would need about one quarter released time, or $2,500 of his salary. Since there are about 900 faculty members in this position, the total released time cost to the Wisconsin State Universities would be about $2,250,000. Let us also assume the faculty members who do not have sufficient funds need $500 apiece. Since there are about 500 of these individuals, the funds cost would be about $250,000.

At this juncture we are begging the issue of the upper cost limit. If we combine the 1,100 that do research, the 900 who do not have sufficient time, and the 500 who do not have sufficient funds, and made provision for these 2,500 individuals to have one quarter released time and $500 in research funds, or a total of $3,000 per individual, the total cost of the research program would be $7,500,000. A figure that fairly boggles the mind. Yet the question arises, how much are answers worth.

"TEACHING-LEARNING" RESEARCH RATE – CURRENT AND PROJECTED

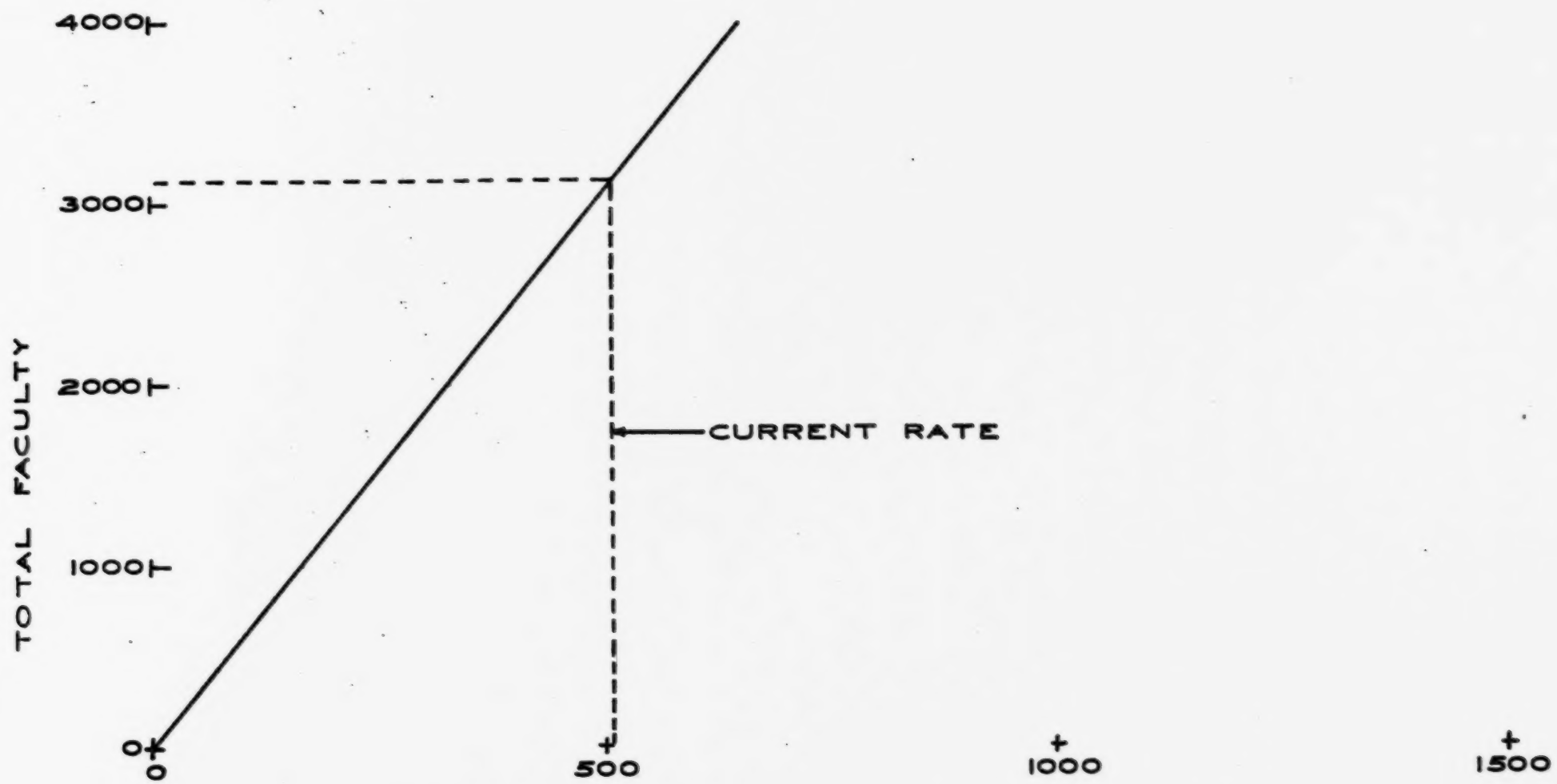

FIG. 6. NO. OF FACULTY DOING TEACHING-LEARNING RESEARCH

Teaching-Learning Research

Figure 6 indicates about 500 faculty members engage in some type of teaching-learning research. A question that remains unanswered is, how many faculty members would engage in teaching-learning research if they had sufficient time and funds? It does not take a seer to ascertain contemporary education at all levels is rampant with problems. If these problems in education are going to get solved, it is going to have to be the long-studied, highly trained, university faculty members that are going to have to do the solving.

How much will teaching-learning research cost? At our quasi-standard figure of $3,000 per faculty member engaged in research, it would cost about $1,500,000 to finance those presently engaged in teaching-learning research. The reader is left to his own projections.

Summary

Time and funds, with time leading about 2 to 1, are the main barriers to research productivity by faculty members.

Most, but not all, departments at the university level are research oriented.

The amount of teaching-learning research done by the various departments in the Wisconsin State Universities varies from as little as 10 percent of the departmental effort to as much as 100 percent.